



## BOREHOLE LOG

CLIENT: DWAF  
PROJECT: MCWAP - Phase 1A  
SITE: Mokolo Dam Pumpstation

**HOLE NO: PH01**

X COORD: 2,653,346

Y COORD: WG27 -73,099

ELEVATION:

PAGE 1 of 1

Core size	% Mat. recov.	% Core recov.	RQD %	No. of fract.	SPT- N value	Water	Sample	Legend	Depth (m)	Description
									0	Ground Surface
S/B	23	n/a	n/a	n/a						<b>Soft to medium hard rock SANDSTONE.</b> Purple and pink banded, highly to moderately weathered, thinly bedded, highly fractured, fine to medium grained. Waterberg Group.
S/B	37	n/a	n/a	n/a					1	
S/B	83	n/a	n/a	n/a					1.2	
TNW	100	100	30	9					2	<b>Hard rock SANDSTONE.</b> Pink and purple banded, unweathered, thinly bedded, moderately to slightly occasionally highly fractured, fine to medium grained. Waterberg Group.
TNW	100	100	0	19					3	
TNW	100	100	80	8					4	
TNW	98	98	50	5					5	
TNW	100	100	100	1					6	
TNW	98	98	55	8					6.7	
									7	<b>Borehole terminated at required depth.</b>
									8	
									9	
									10	

NOTES 1: Water at 5.10m

2:

3:

4:

CONTRACTOR: Weppelmann Drilling

MACHINE: D90R

INCLINATION: Vertical

FILE REF: J4210\3 WorkingMokolo Phase 1A\Drilling and Pumping\Borehole Logs\0 K

DRILLING DATE: 17 April 2009

DATE LOGGED: 22 April 2009

LOGGED BY: rr



**VELA VKE**  
Consulting Engineers

+27 (0)12 481 3800  
www.velavke.co.za

template:



## BOREHOLE LOG

CLIENT: DWAF  
PROJECT: MCWAP - Phase 1A  
SITE: Mokolo Dam Pumpstation

**HOLE NO: PH02**

X COORD: 2,653,383  
Y COORD: WG27 -73,130  
ELEVATION:

PAGE 1 of 1

Core size	% Mat. recov.	% Core recov.	RQD %	No. of fract.	SPT- N value	Water	Sample	Legend	Depth (m)	Description
									0.0	Ground Surface
S/B	64	n/a	n/a	n/a					0.5	<b>Medium hard rock SANDSTONE.</b> Purple and pink banded, moderately to slightly weathered, thinly bedded, highly fractured, fine to medium grained. Waterberg Group.
S/B	18	n/a	n/a	n/a					1.5	
TNW	100	100	70	9					2.0	<b>Hard rock SANDSTONE.</b> Pink and purple banded, unweathered, thinly bedded, moderatey fractured, fine to medium grained. Waterberg Group.
									3.0	
TNW	98	98	90	5					4.0	
									5.0	
TNW	92	92	65	8					5.8	<b>Borehole terminated at required depth.</b>
									6.0	
									7.0	
									8.0	
									9.0	
									10.0	

NOTES 1: Water at 5.20m

2:

3:

4:

CONTRACTOR: Weppelmann Drilling

MACHINE: D90R

INCLINATION: Vertical

FILE REF: J4210\3 Working\Mokolo Phase 1A\Drilling and Piling\J4210\3\Borehole Log PH02

DRILLING DATE: 16 April 2009

DATE LOGGED: 22 April 2009

LOGGED BY: rr



**VELA VKE**  
Consulting Engineers

+27 (0)12 481 3800  
www.velavke.co.za

template:



## BOREHOLE LOG

CLIENT: DWAF  
PROJECT: MCWAP - Phase 1A  
SITE: Mokolo Dam Pumpstation

**HOLE NO: PH03**

X COORD: 2,653,432  
Y COORD: WG27 -73,107  
ELEVATION:

PAGE 1 of 1

Core size	% Mat. recov.	% Core recov.	RQD %	No. of fract.	SPT-N value	Water	Sample	Legend	Depth (m)	Description
									0.0	Ground Surface
S/B	W	n/a	n/a	n/a					0.6	<b>Loose? silty gravelly SAND.</b> Brown, transported.
S/B	27	n/a	n/a	n/a					1.3	<b>Soft to medium hard rock SANDSTONE.</b> Pink and purple banded, moderately weathered, thinly bedded, highly fractured, fine to medium grained. Waterberg Group.
TNW	38	30	15	7					2	<b>Hard rock SANDSTONE.</b> Pink and purple banded, unweathered (completely weathered 3.16-3.40m), thinly bedded, moderately to slightly occasionally highly fractured, fine to medium grained. Waterberg Group.
TNW	67	65	45	4					3	
TNW	100	100	90	5					4	
TNW	100	100	90	8					5	
TNW	98	98	50	4					6	
									6.5	<b>Borehole terminated at required depth.</b>
									7	
									8	
									9	
									10	

NOTES 1: Nil water

2:

3:

4:

CONTRACTOR: Weppelmann Drilling

MACHINE: D90R

INCLINATION: Vertical

FILE REF: J42103 Working Mokolo Phase 1A Drilling and Core Log Borehole J42103 K

DRILLING DATE: 16 April 2009

DATE LOGGED: 22 April 2009

LOGGED BY: rr



**VELA VKE**  
Consulting Engineers

+27 (0)12 481 3800  
www.velavke.co.za





## BOREHOLE LOG

CLIENT: DWAF  
PROJECT: MCWAP - Phase 1A  
SITE: Mokolo Dam Pumpstation

**HOLE NO: PH04**

X COORD: 2,653,421

Y COORD: WG27 -73,119

ELEVATION:

PAGE 1 of 1

Core size	% Mat. recov.	% Core recov.	RQD %	No. of fract.	SPT-N value	Water	Sample	Legend	Depth (m)	Description
									0.0	Ground Surface
S/B	28	n/a	n/a	n/a						<b>Soft to medium hard rock SANDSTONE.</b> Pink and purple banded, highly to moderately weathered, thinly bedded, highly fractured, fine to medium grained. Waterberg Group.
S/B	55	n/a	n/a	n/a					1	
S/B	62	n/a	n/a	n/a						
TNW	56	56	0	4					1.8	
TNW	78	78	45	10					2	<b>Hard rock SANDSTONE.</b> Pink and purple banded, unweathered (brown clay encountered 3.53 - 3.71m), thinly bedded, moderately to slightly occasionally highly fractured, fine to medium grained. Waterberg Group.
TNW	100	76	45	4					3	
TNW	72	72	40	8					4	
TNW	94	94	0	8					5	
TNW	95	95	60	9					6	
									6.3	
									7	<b>Borehole terminated at required depth.</b>
									8	
									9	
									10	

NOTES 1: Water at 3.80m

2:

3:

4:

CONTRACTOR: Weppelmann Drilling

MACHINE: D90R

INCLINATION: Vertical

FILE REF: J42103 Working\Mokolo Phase 1A\Drilling and Borehole Logs\J42103\Borehole Log PH04

DRILLING DATE: 19 April 2009

DATE LOGGED: 22 April 2009

LOGGED BY: rr



**VELA VKE**

Consulting Engineers

+27 (0)12 481 3800

www.velavke.co.za

template:



## BOREHOLE LOG

CLIENT: DWAF  
PROJECT: MCWAP Phase 1A, Northern leg  
CLIENT NO:  
SITE:  
KILOMETRE:

**HOLE NO: 7-01**

X COORD: 2,620,956  
Y COORD: WG27 -63,042  
ELEVATION:

PAGE 1 of 1

Core size	% Mat. recov.	% Core recov.	RQD %	No. of fract.	SPT- N value	Water	Sample	Legend	Depth (m)	Description
									0	Ground Surface
TNW	53	na	na	na					0.9	<b>Clayey silty SAND</b> Brown, transported
TNW	25 100	na	na	na					1	<b>CALCRETE</b> Recovered as gravel and cobbles
									1.7	
TNW	96	93	52	12					2	<b>Strongly to very strongly cemented CALCRETE</b> Hardpan. Disintegrated section 2.60-2.65m.
									3	
TNW	99	99	74	10					4	
	99								4.4	
TNW	79	79	0	7					5	<b>Weakly cemented CALCRETE</b> Hardpan. Occasionally very weakly cemented.
									5.1	
										<b>Hole stopped at required depth</b>
										End of Log
									6	
									7	
									8	

NOTES 1:

2:

3:

4:

CONTRACTOR: Weppelmann Geotechnical Drilling  
MACHINE: D90R  
INCLINATION: Vertical  
FILE REF:

DRILLING DATE: 22 May 2009

DATE LOGGED: 26 May 2009

LOGGED BY: rr/ajs

PROJECT NUMBER: J4210-1



**VELA VKE**  
Consulting Engineers

+27 (0)12 481 3800  
www.velavke.co.za



## BOREHOLE LOG

CLIENT: DWAF  
PROJECT: MCWAP Phase 1A, Western leg  
CLIENT NO:  
SITE:  
KILOMETRE:

**HOLE NO: 25A-01**

X COORD: 2,622,400  
Y COORD: WG27 -35,410  
ELEVATION:

PAGE 1 of 1

Core size	% Mat. recov.	% Core recov.	RQD %	No. of fract.	SPT- N value	Water	Sample	Legend	Depth (m)	Description
									0.0	Ground Surface
TNW	34	na	na	na					0.9	<b>Silty SAND</b> Brown, transported.
TNW	100	100	63	3					1.7	<b>Very strong to strongly cemented CALCRETE</b> Hardpan
TNW	100	92	24	7					3.0	<b>Weakly cemented CALCRETE</b> Hardpan, mostly disintegrated.
TNW	56	na	na	na					3.8	<b>Very soft to soft rock SANDSTONE</b> Moderately to highly weathered, brown, thinly bedded, highly spaced, filled, horizontal, rough discontinuities, fine to medium grained
TNW	73	67	1	16					5.1	<b>Soft to medium hard rock SANDSTONE</b> Unweathered, light brown, thinly bedded, highly spaced, clean, generally horizontal, slightly rough discontinuities, fine to medium grained.
TNW	100	97	59	8						<b>Hole stopped at required depth</b>
										End of Log
									6	
									7	
									8	

NOTES 1:

- 2:  
3:  
4:

CONTRACTOR: Weppelmann Geotechnical Drilling  
MACHINE: D90R  
INCLINATION: Vertical  
FILE REF:

DRILLING DATE: 21 May 2009  
DATE LOGGED: 26 May 2009  
LOGGED BY: rr/ajs  
PROJECT NUMBER: J4210-1



**VELA VKE**  
Consulting Engineers

+27 (0)12 481 3800  
[www.velavke.co.za](http://www.velavke.co.za)





## BOREHOLE LOG

CLIENT: DWAF  
PROJECT: MCWAP Phase 1A, Western leg  
CLIENT NO:  
SITE:  
KILOMETRE:

**HOLE NO: 25C-01**

X COORD: 2,623,350  
Y COORD: WG27 -33,225  
ELEVATION:

PAGE 1 of 1

Core size	% Mat. recov.	% Core recov.	RQD %	No. of fract.	SPT- N value	Water	Sample	Legend	Depth (m)	Description
									0.0	Ground Surface
TNW	53	na	na	na					0	<b>Silty SAND</b> Red/brown, transported. Occasionally clayey.
TNW	60	na	na	na					1	
	S	P	T		16				2	
NWD4	67	na	na	na					3.0	
	S	P	T		R				3	<b>Cemented occasionally strongly cemented FERRICRETE</b> Nodular. Recovered as gravel and occasional cobbles.
NWD4	45	na	na	na					4	
TNW	24	na	na	na					4.7	
TNW	100	79	0	8					4.9	
									5.1	<b>Very soft rock SANDSTONE</b> Highly weathered, light brown/grey, thinly bedded, highly fractured, filled, horizontal, rough discontinuities, fine to medium grained. With much ferricrete nodules.  <b>Soft rock SANDSTONE</b> Unweathered, light brown, thinly bedded, highly fractured, clean, horizontal, slightly rough discontinuities, fine to medium grained. With much ferricrete.  <b>Hole stopped at required depth</b>
									6	
									7	
									8	

End of Log

NOTES 1:  
2:  
3:  
4:

CONTRACTOR: Weppelmann Geotechnical Drilling  
MACHINE: D90R  
INCLINATION: Vertical  
FILE REF:

DRILLING DATE: 21 May 2009  
DATE LOGGED: 26 May 2009  
LOGGED BY: rr/ajs  
PROJECT NUMBER: J4210-1



**VELA VKE**  
Consulting Engineers

+27 (0)12 481 3800  
[www.velavke.co.za](http://www.velavke.co.za)